

Villarreal, Monique

From: Joseph, Paul
Sent: Tuesday, June 26, 2018 2:46 PM
To: Villarreal, Monique
Subject: Fw: Facial Recognition Technology
Attachments: Camvi-AI-Biometrics-Overview.pdf

From: Matt McCrann <matt.mccrann@camvitech.com>
Sent: Thursday, February 22, 2018 1:32 PM
To: Joseph, Paul
Cc: john.chen@camvitech.com
Subject: Re: Facial Recognition Technology

Hi Paul,

Thanks for taking the time to discuss some of your unit's requirements today. I think your use cases are a great match for Camvi's capabilities and I look forward to supporting your team any way we can.

I've attached more information on our solutions for you to share internally. If you or anyone at San Jose PD have questions regarding our capabilities, please feel free to reach out at anytime.

Also, I know you have some calls to take care of with other vendors, when do you plan to move forward in your evaluations? We'd love the opportunity to have SJPd see what it can do with Camvi's technology.

Thanks again Paul!

Best regards,

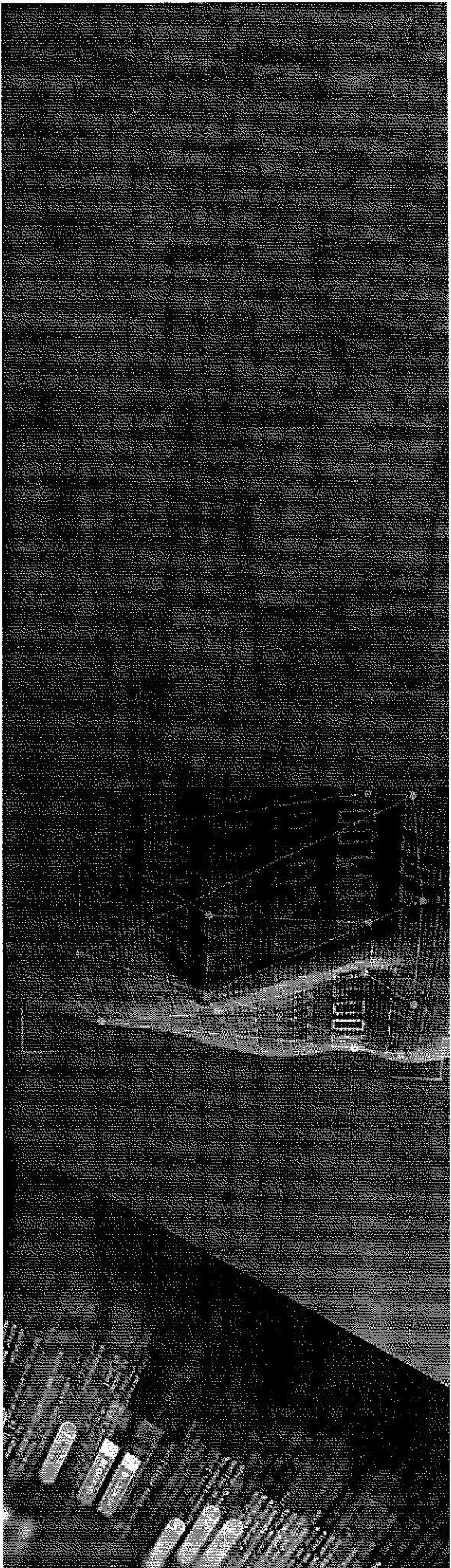
Matt McCrann
Director, Sales & Business Development
Camvi Technologies
+1 202.468.8467
matt.mccrann@camvitech.com
www.camvitech.com

On Thu, Feb 22, 2018 at 2:20 PM Joseph, Paul <PAUL.JOSEPH@sanjoseca.gov> wrote:

I am the Lieutenant at the San Jose PD Robbery Unit. Amongst my other duties, I am working on researching the acquisition by SJPd of some form of facial recognition technology. I understand that your company may have a product that could meet our needs.

Please call me at 408-277-4166 so that we may discuss our Department's needs, and your company's products.

Lt. Paul Joseph #3148
San Jose Police Department
Bureau of Investigations/Robbery



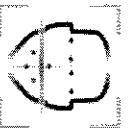
Camvi Technologies Overview

February 2018



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technologies

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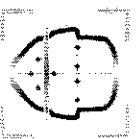


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- **Camvi Background**
- **Camvi Solutions**
- **Summary**
- **Contact**

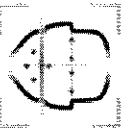


Camvi Technologies



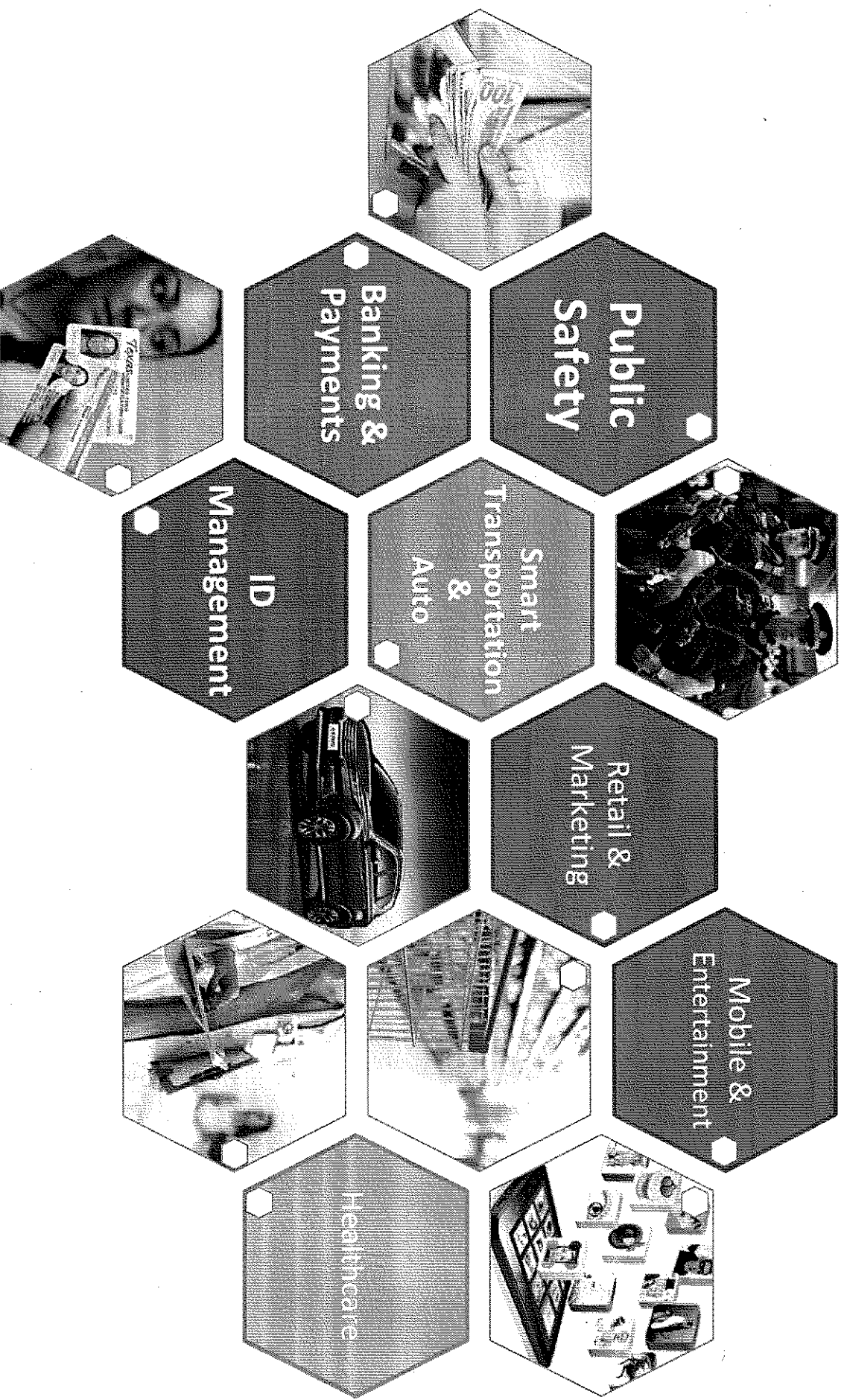
camvi
Technologies

- Founded in 2014
- Headquartered in Palo Alto, CA with offices in Burlington, MA and Germantown, MD.
- Leader in AI & Machine Learning Biometrics
- Validated Solutions - independent testing by several government agencies worldwide (e.g. NIST)
- Serves Government and Enterprise Customers



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Multi-Modal Biometrics: Markets



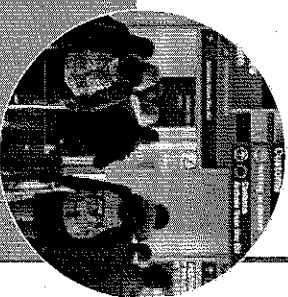


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Current Customer Base and Products

Government

- Real-time Identification of Illegals in ASEAN
- Hand-held device with integrated fingerprint and facial recognition
- Roll-out of Edge Solutions in multiple countries



Border Control

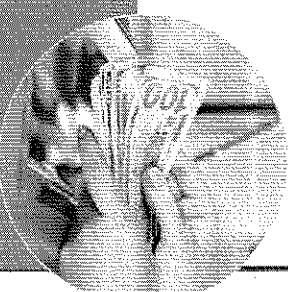
Cross-Sector

- Security: Perimeter entry/exit via face & vehicle matching
- Intelligent Access: manage access to secure rooms & buildings
- Commercial: enforce access rules across multi-zone campus
- Education: student access to test center

Access Control

Enterprise

- Banking customer registration with biometrics
- Banking customer identification via facial recognition, voice recognition
- E-Commerce authentication
- Integrated solution in ASEAN

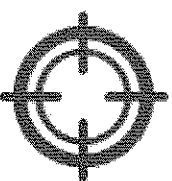


Banking

Competitive Advantages



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Accuracy Combined with Speed

- **Sub 200 millisecond** search and retrieval time on a single commodity server node with a database containing 5 million faces
- LFW benchmark face verification accuracy **99.6%**



Scalable Cloud and Edge Solution

- Massively scalable architecture capable of supporting **billions of face records** (Solid deployment track record: nationwide deployed)
- Low-power, high-performance **edge platforms** for deep learning-based inference and/or training to achieve superior performance



Value

- AI-powered architecture supports complex and challenging use cases
- Scalable pricing based on size of face database and transaction usage
- Significantly higher value unlocked by a Camvi deployment compared to 1st Gen alternatives

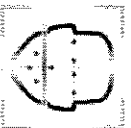
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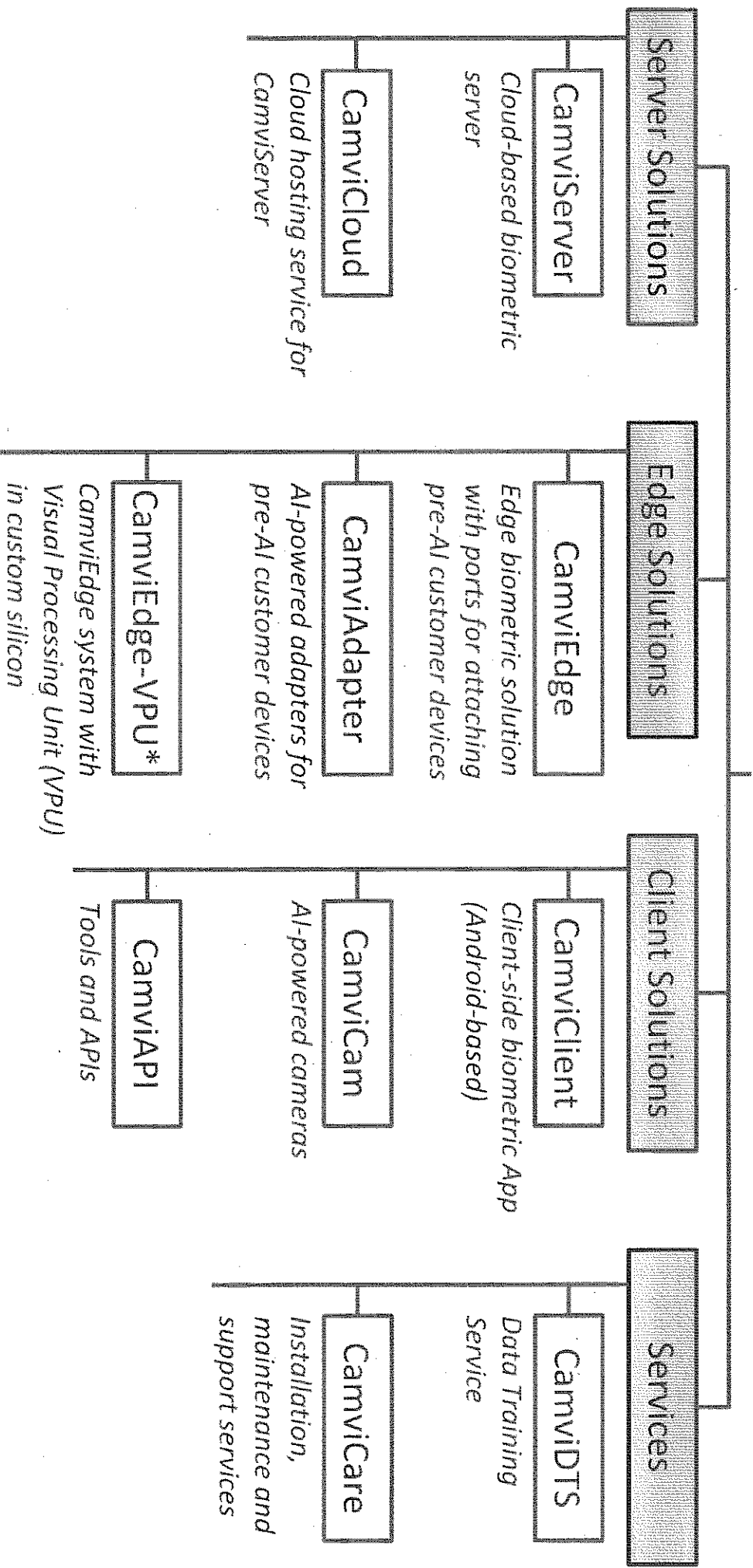




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Camvi Products and Services

Camvi Biometric Solutions

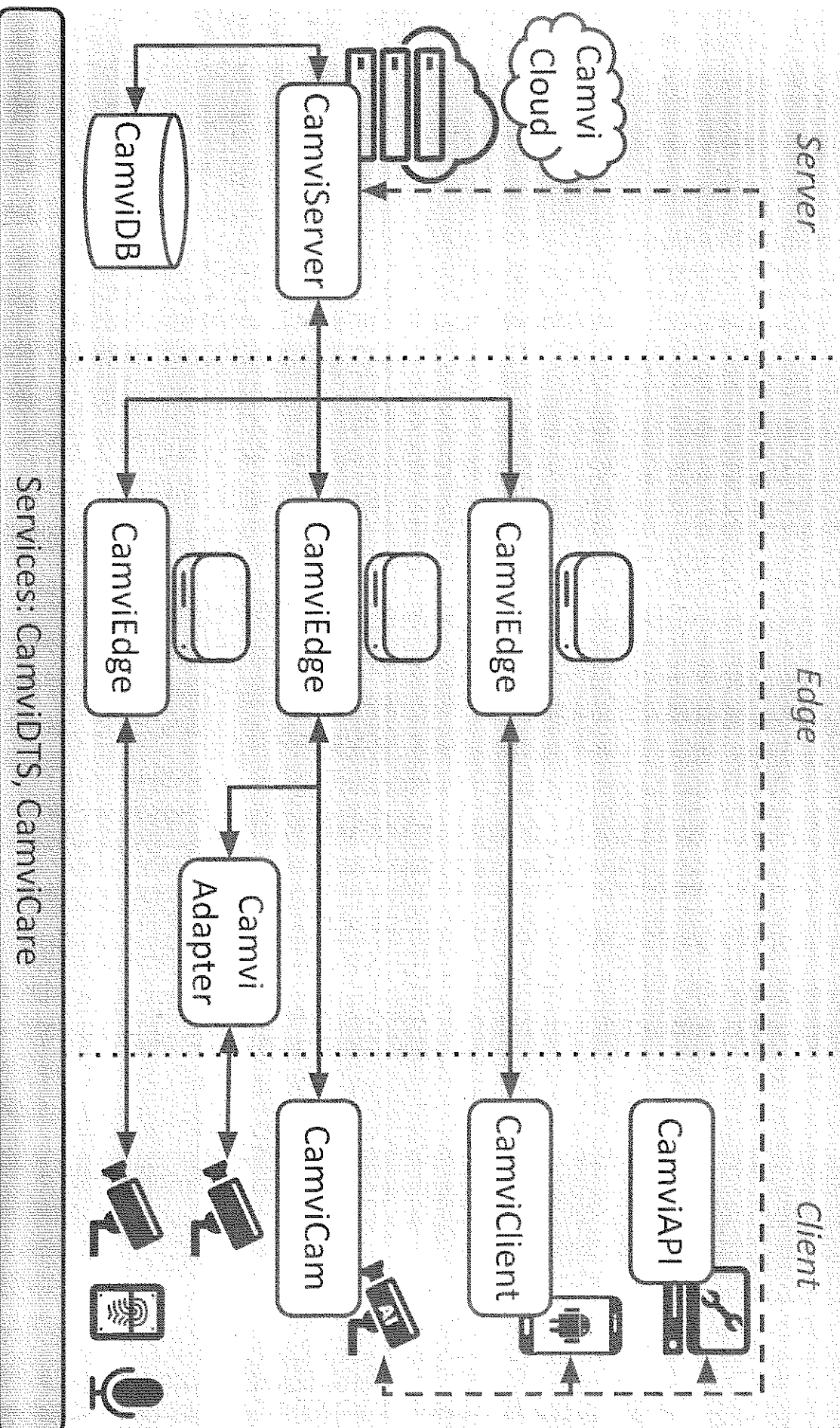


* Roadmap - 2019

Camvi Solutions Architecture



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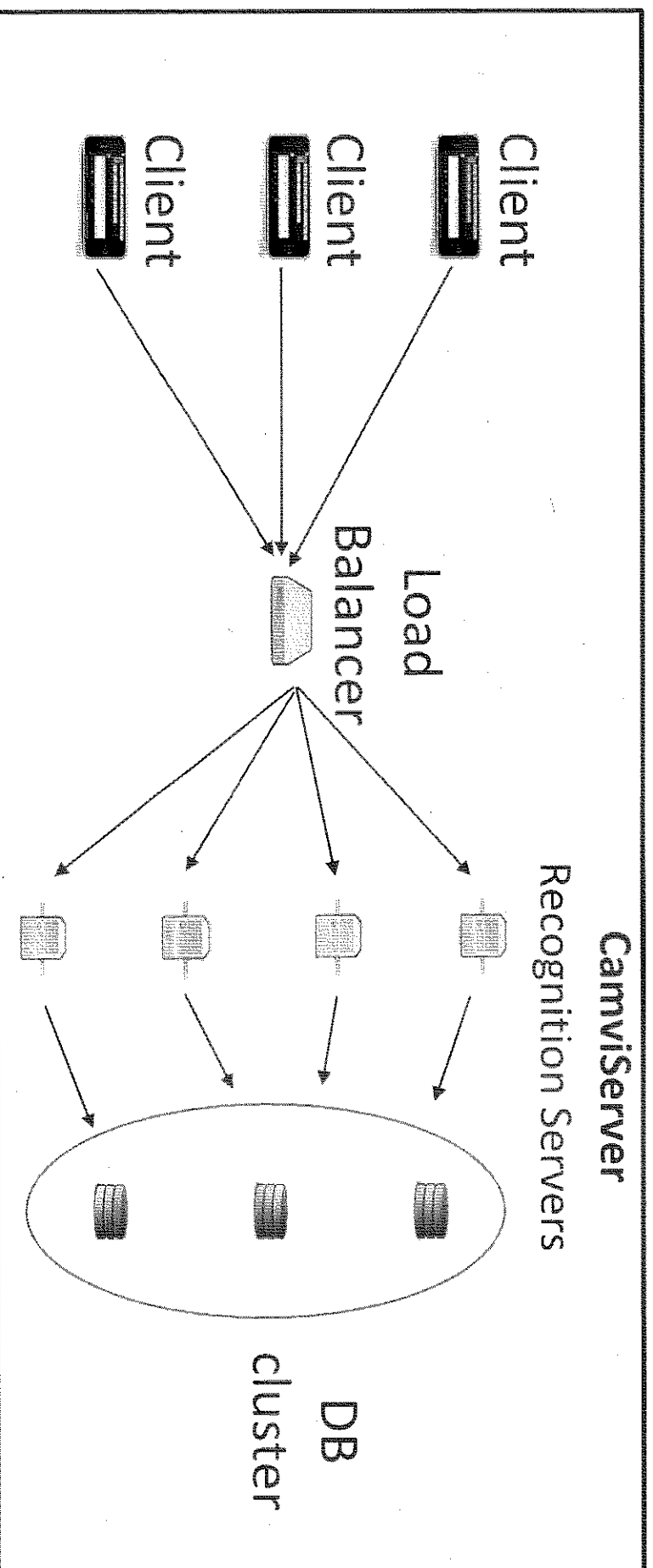


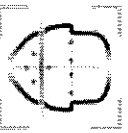
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CamviServer: Cloud-Based Biometric Server

- **Commercially Available Today**
- Deep learning-based recognition module
- Efficient feature representation of facial data
- Reliable architecture scales to > 1 billion subjects

Applications:
Large-scale access
control, borders, secure
campus, airports

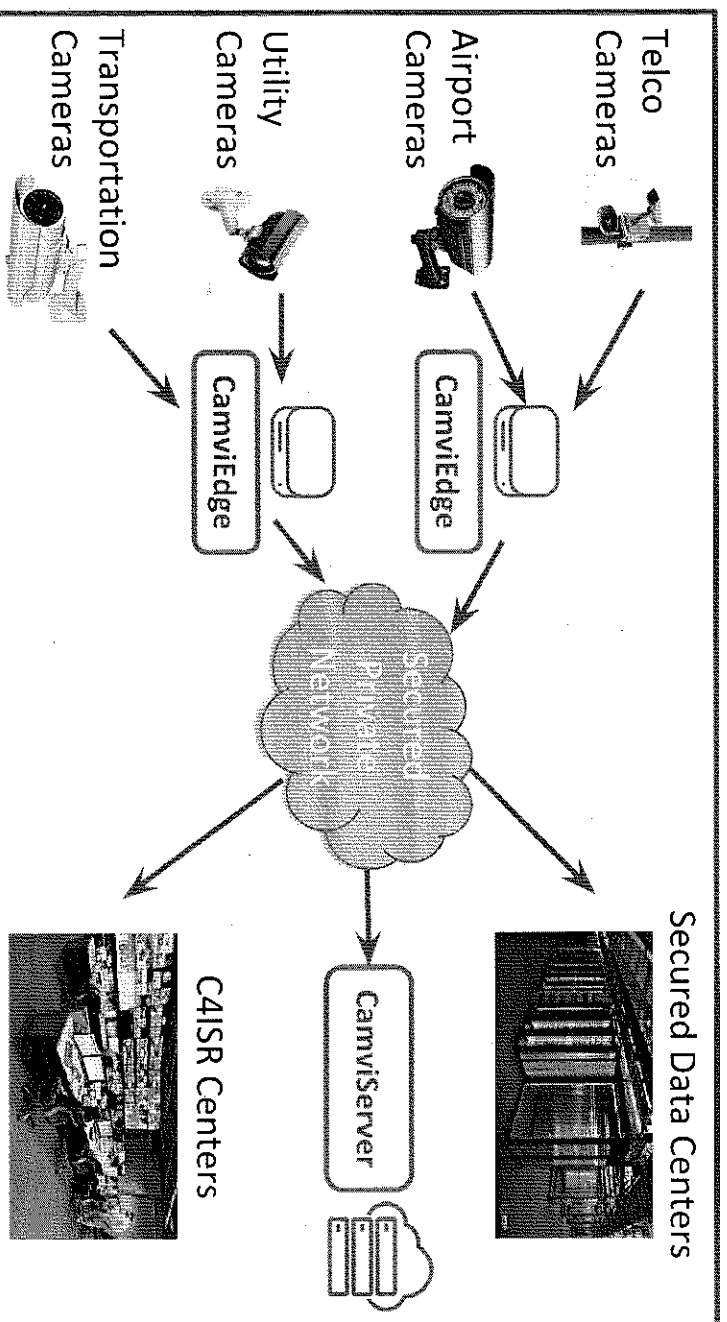




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CamviEdge: Edge Biometric Solution

- Integrated edge solution, comprising compact host platform and biometrics services
- **CamviEdge** provides instant local validation at the edge, with reduced bandwidth and server cost, enabling higher quality and efficiency
- Transform standard camera feeds into AI-enabled Smart Feeds
- Correlation with **CamviServer** resources ensures real-time updates



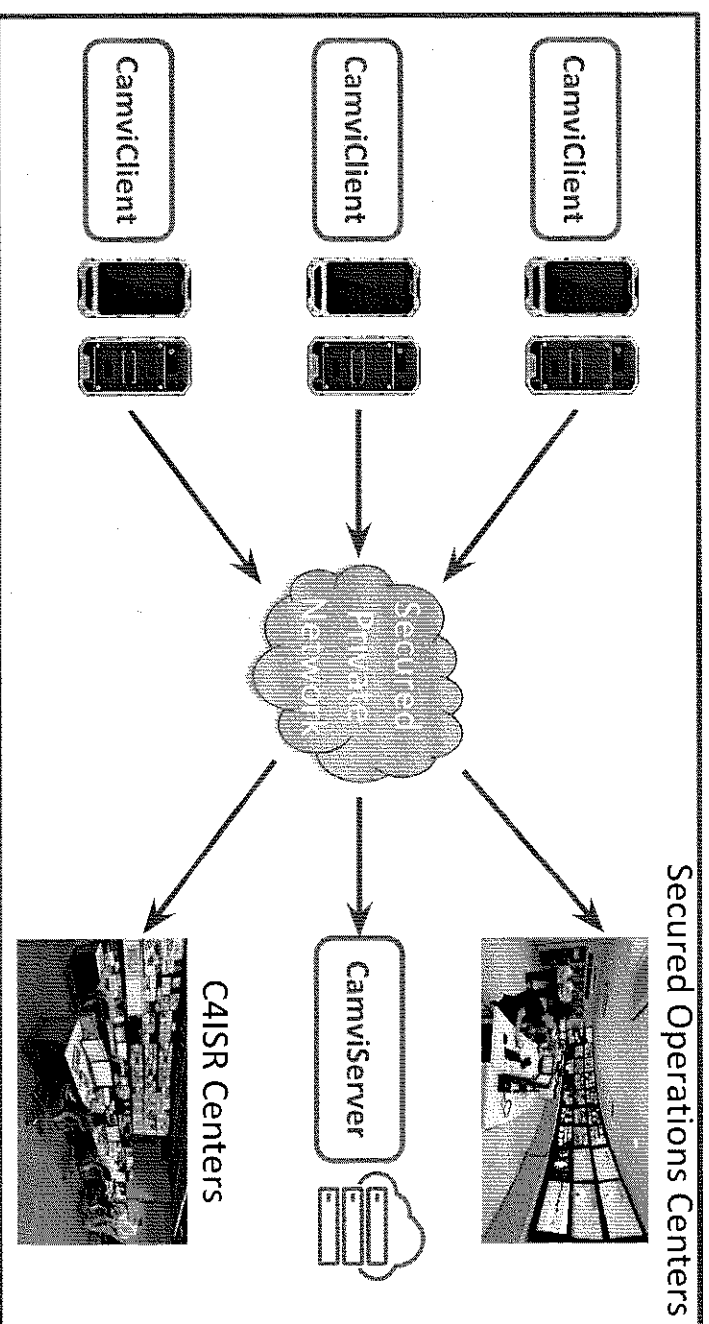
Applications:
Real-time CCTV
Surveillance &
Access Control



Camvi
Technologies

CamviClient: Client-Side Biometric App

- CamviClient provides users with an Android-based client application for biometrics
- Delivers high performance biometrics to a wide range of Android client devices
- Local matching option saves bandwidth & cost, enabling higher quality and efficiency
- Provides instant feedback regardless of connectivity status from local whitelist/blacklist
- Correlation with CamviServer resources ensures real-time updates



Applications:
Defense & Law
Enforcement;
Dash Cam,
BodyCam,
Smartphone



CamviAdapter: AI-Powered Adapters

- A range of AI-powered adapters to retrofit to existing cameras
- Enables smart decision making at the camera itself
 - Improves accuracy and responsiveness of the overall solution
 - Reduced resource wastage (Bandwidth, CPU, Human)
 - Facilitates streamlined machine-driven decisions
- Extends lifetime of existing cameras by 5+ years
 - Flexible implementation provides path for future upgrades
- Protects capital and operational investments in installed bases

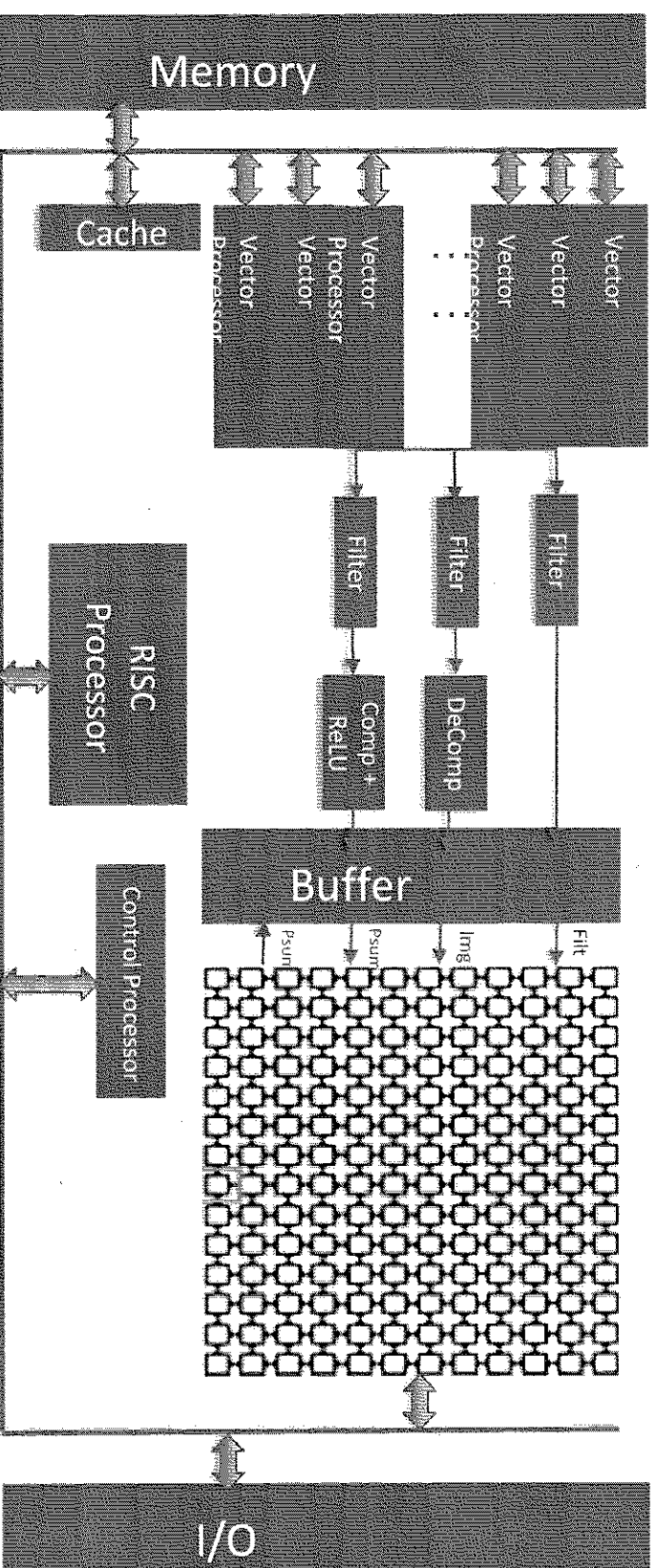
Application: Legacy CCTV Surveillance & Access Control

CamviEdge-VPU (2019)



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Technologies

- Ultra low-power & high-performance VPU chip
- AI-Powered Biometrics on a Chip (AIBOC)
- Patent pending



Application: Massive scale machine-based monitoring

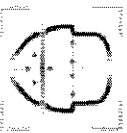
CamviDTS: Data Training Service



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Technologies

- CamviDTS is a world-class **Data Training Service** for customers
- Unlocks continuous improvement in performance and accuracy of biometric matching
- Staffed by Camvi Data Scientists to optimize customers' data sets
- How it Works:
 - Customers optimize their own data training models for Camvi deployments
 - Customers retain control of their own data sets at all times
 - Camvi provides tools and expertise throughout the lifetime of the process

Applicable to all Camvi customers



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computing

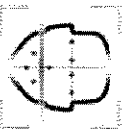
Multi-modal & Compounded Solutions

Camvi offers multimodal biometrics and compounded solutions consisting of Biometrics and Object Recognition:

- Mobile Fingerprint + Face
- Advanced License Plate Reader
 - Match face with plate
 - Partial plate matches
 - Multiple faces and plates from video in real-time
 - Pilot underway in Thailand
- **What's Next:** Personalization match by bumper stickers, emblems, stickers, damage detection.

Applications: Border Control and Law Enforcement

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Summary

- AI-powered Biometric Solutions
- Lightweight solutions = speed, flexibility; capture, compute, validate on the edge
- Highly cost-effective and scalable; handheld to databases with greater than a *Billion* faces
- Integrates Facial Recognition, Multimodal Biometrics, and Object Recognition

Contact



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Camvi Technologies Inc.

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Palo Alto, CA 94301

Phone: +1 650-798-5443

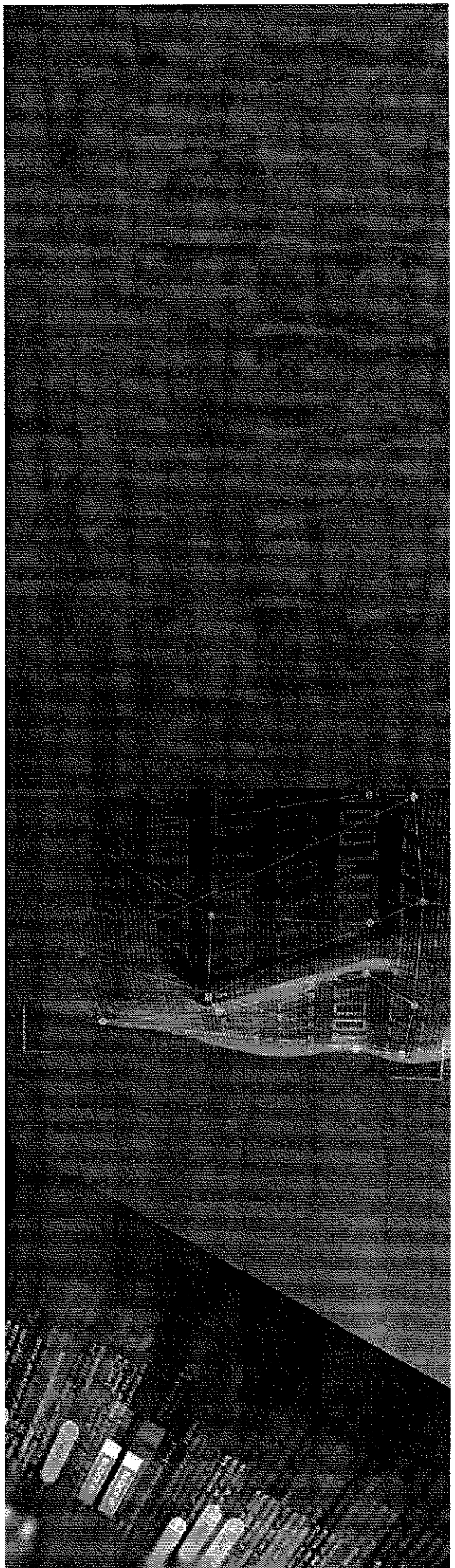
www.camvitech.com

Matt McCrann

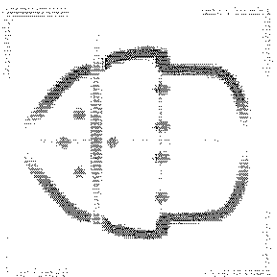
Director, Sales & Business Development

matt.mccrann@camvitech.com

+1 202-468-8467



Thank you!



**Camvi
Technologies**

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From: Joseph, Paul
Sent: Tuesday, June 26, 2018 2:47 PM
To: Villarreal, Monique
Subject: Fw: SJPD - Camvi Technologies
Attachments: Camvi-AI-Biometrics-Overview.pdf

From: Matt McCrann <matt.mccrann@camvitech.com>

Sent: Friday, March 9, 2018 8:44 AM

To: Joseph, Paul

Cc: Williams, Shawny; Schroder, Edward; Tindall, David; Lombardo, Gregory; Spagnoli, Paul; Ta, Jason; Chen, Derek; Storlie, Craig; Pedreira, Eduardo; John Chen

Subject: SJPD - Camvi Technologies

Hi Paul,

I want to thank you and the team for taking the time yesterday to meet with us. I am attaching a soft copy of the presentation we covered for your reference. If any follow-on questions arise, please don't hesitate to contact us at anytime.

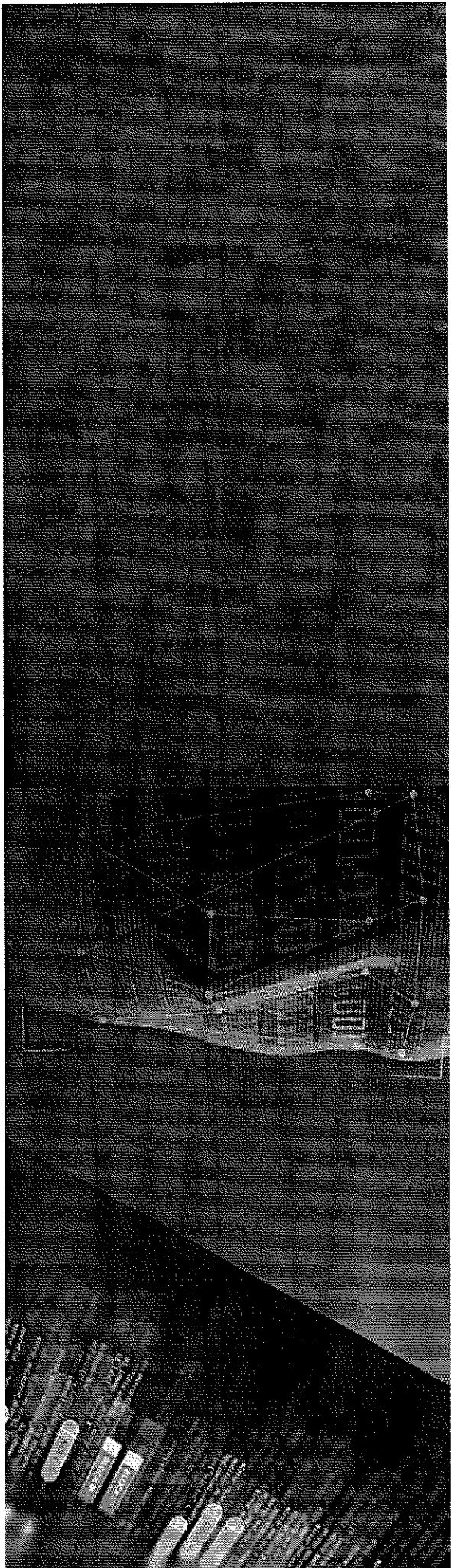
We look forward to demonstrating the specific use cases brought up yesterday i.e. stills from video against actual database, mobile/smartphone application scenarios. We should be good to go in a month, so please let us know what and when works best for the team there anytime in April or May.

Also, we'd love to demonstrate a relevant scenario regarding your actual images, so if you'd like for us to work with your Systems Team, just let us know the best way forward.

Thanks again and have a great weekend!

Best regards,

Matt McCrann
Director, Sales & Business Development
Camvi Technologies
Mobile: 202-468-8467
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Camvi Technologies Overview

March 2018



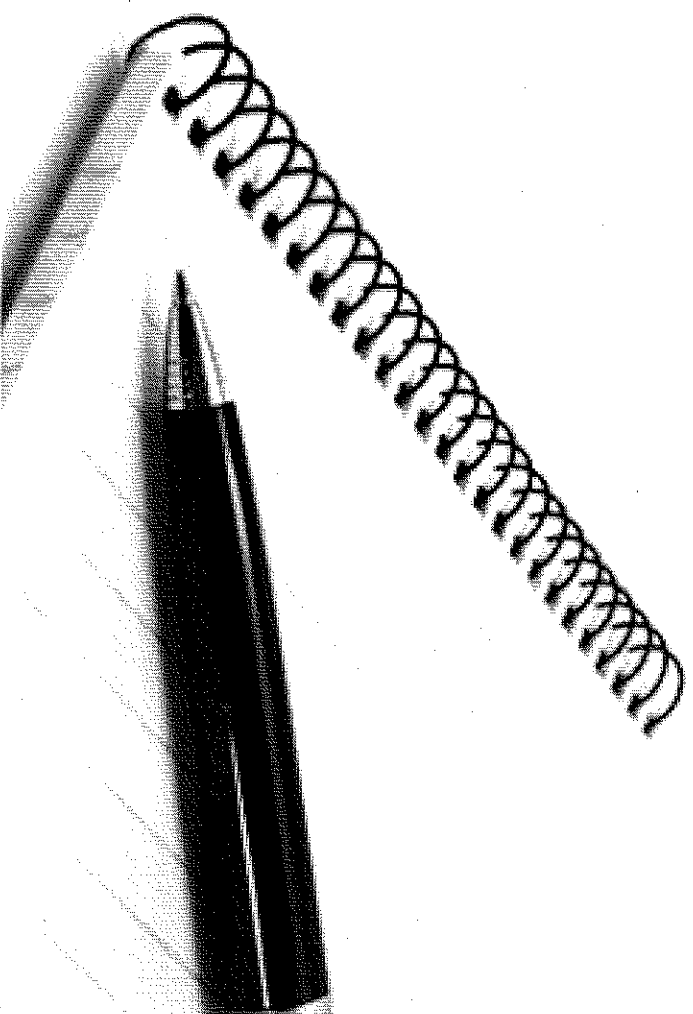
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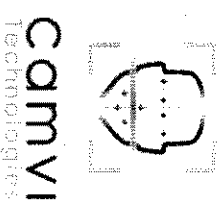


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Technologies

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Camvi Technologies



- Founded in 2014
- Headquartered in Palo Alto, CA with offices in Burlington, MA and Germantown, MD.
- Leader in AI & Machine Learning Biometrics
- Validated Solutions - independent testing by several government agencies worldwide (e.g. NIST)
- Serves Government and Enterprise Customers

Multi-Modal Biometrics: Markets



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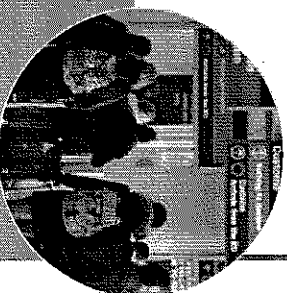


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Current Customer Base and Products

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- Hand-held device with integrated fingerprint and facial recognition
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Border Control

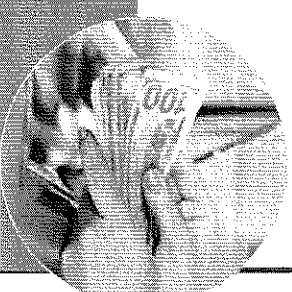
Cross-Sector

- Security: Perimeter entry/exit via face & vehicle matching
- Intelligent Access: manage access to secure rooms & buildings
- Commercial: enforce access rules across multi-zone campus
- Education: student access to test center

Access Control

Enterprise

- Banking customer registration with biometrics
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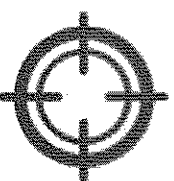


Banking

Competitive Advantages



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Accuracy Combined with Speed

- **Sub 200 millisecond** search and retrieval time on a single commodity server node with a database containing 5 million faces
- LFW (faces in the wild) benchmark face verification accuracy **99.6%**



Scalable Cloud and Edge Solution

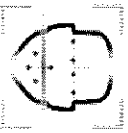
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Value

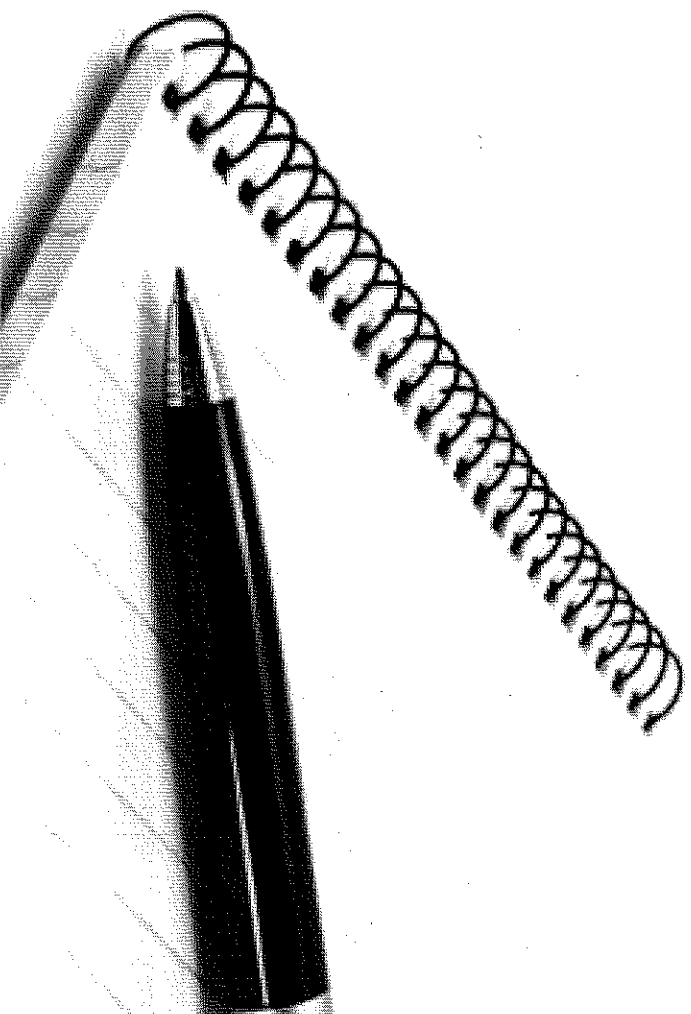
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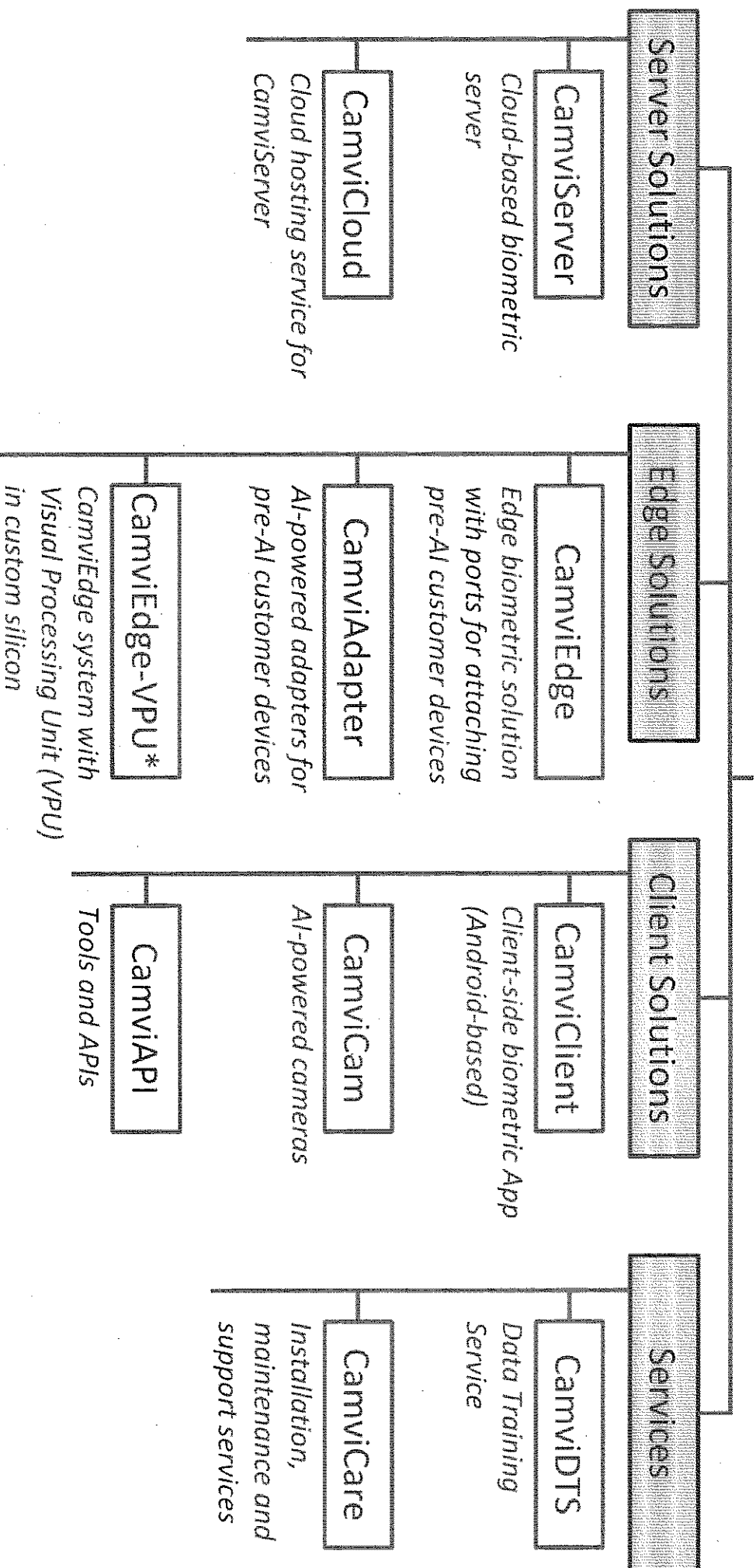




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Camvi Products and Services

Camvi Biometric Solutions

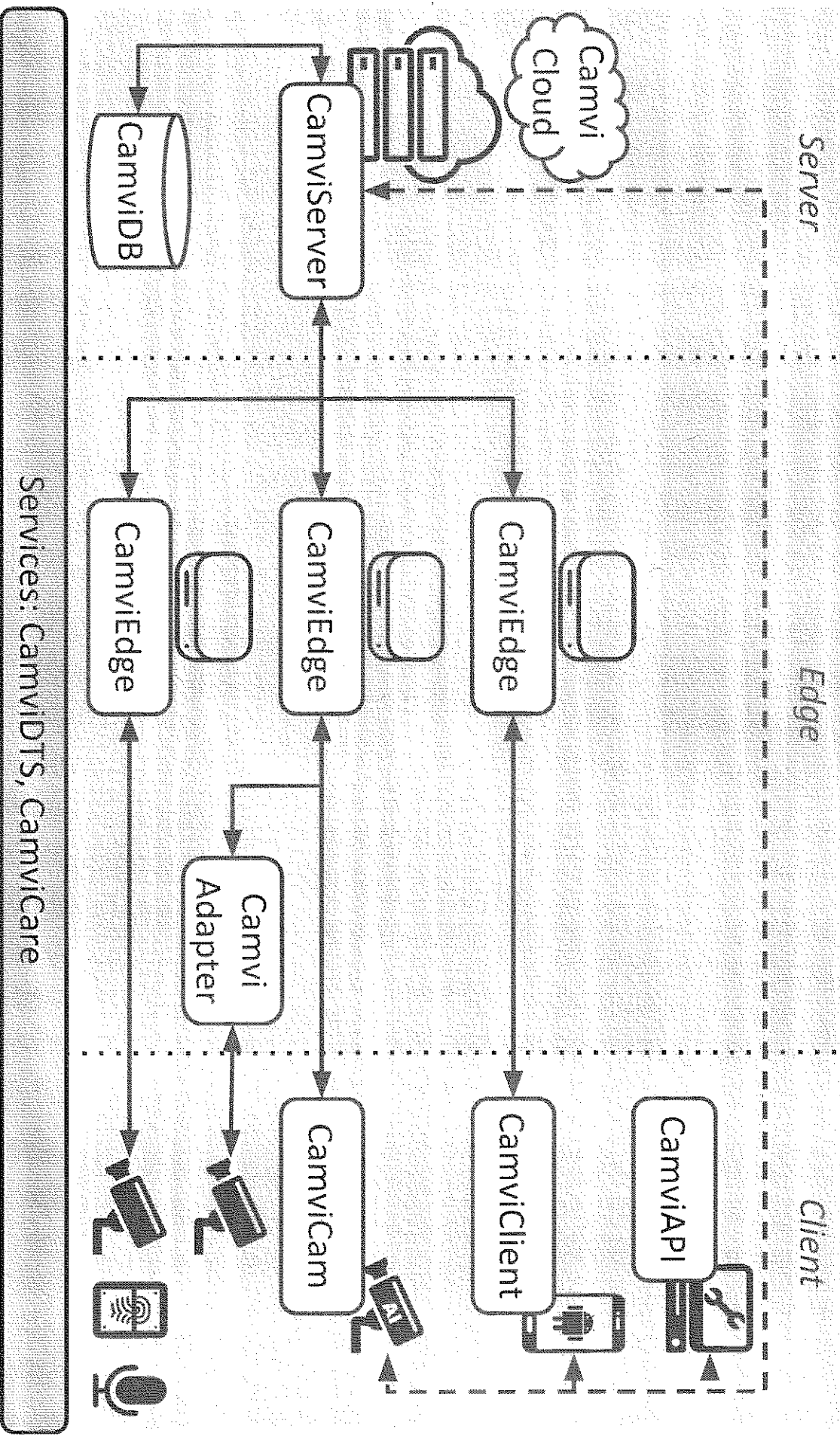


* Roadmap - 2019



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Camvi Solutions Architecture



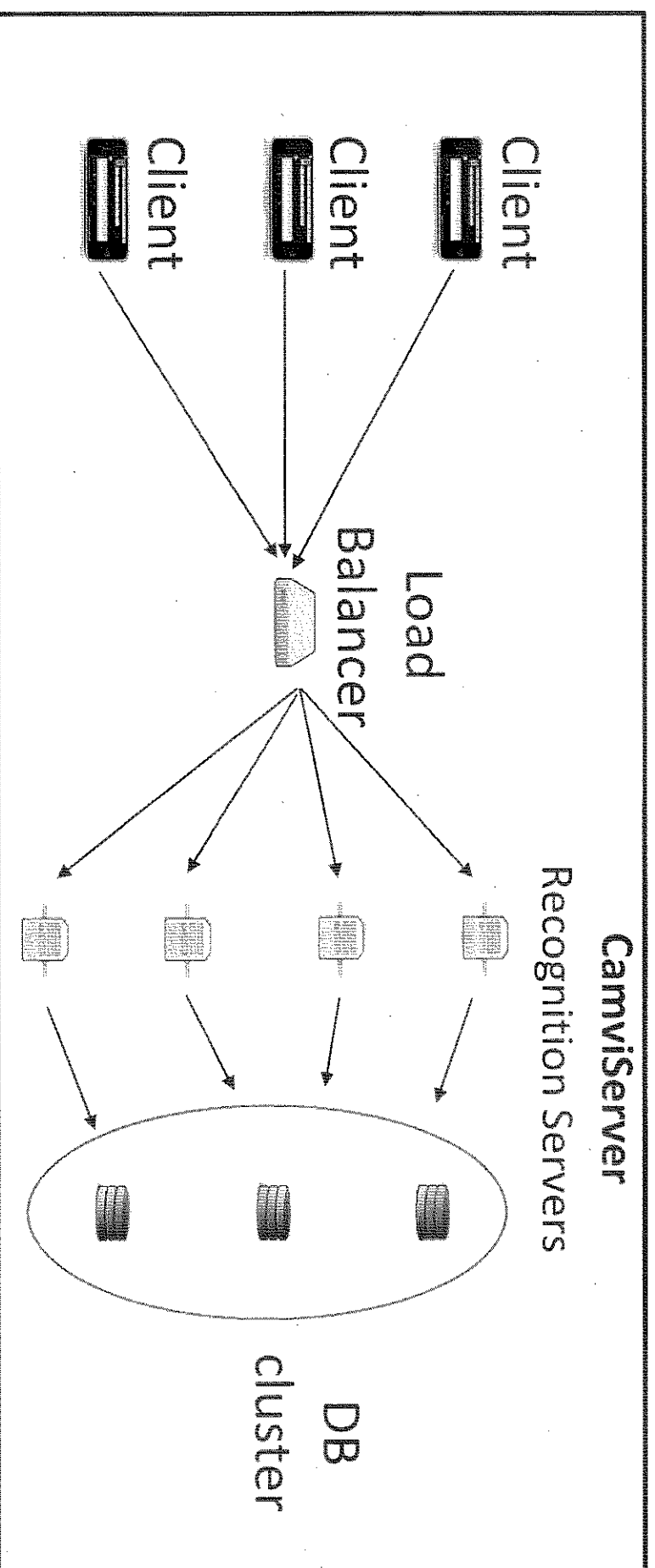


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technologies

CamviServer: Cloud-Based Biometric Server

- **Commercially Available Today**
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Applications:
Large-scale access
control, borders, secure
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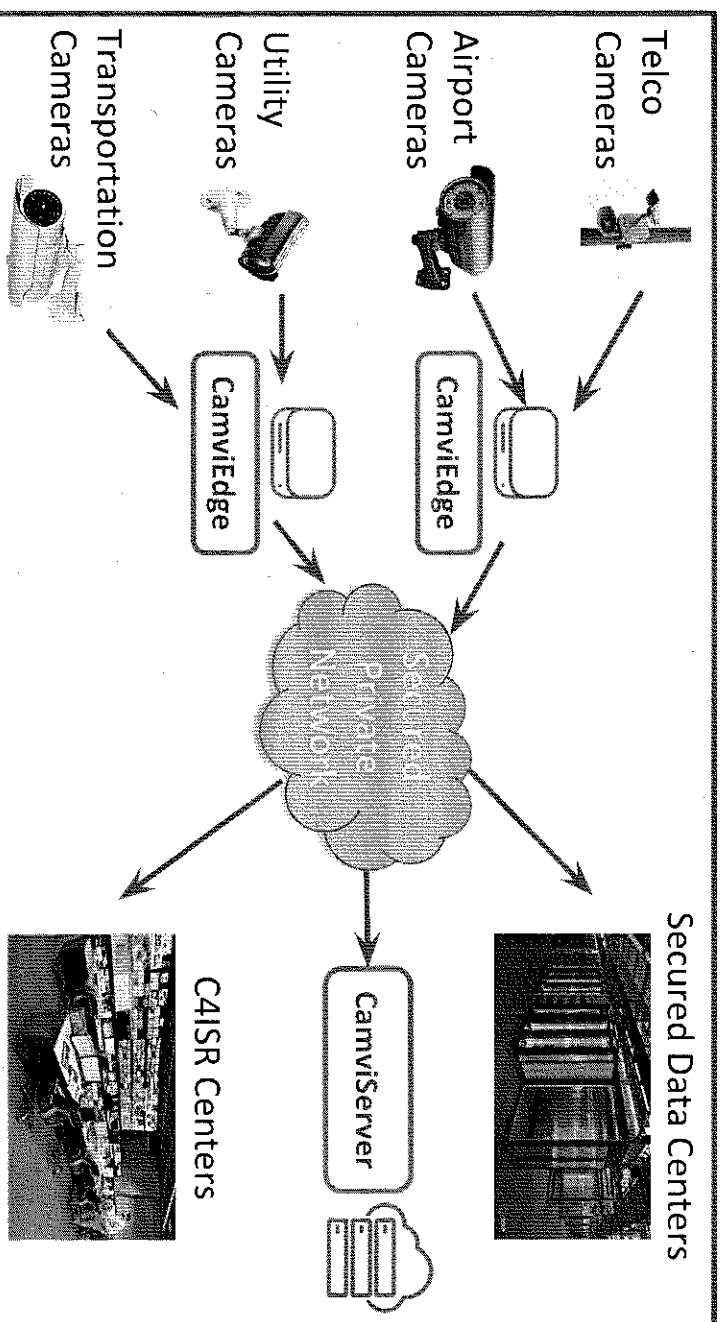




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Technologies

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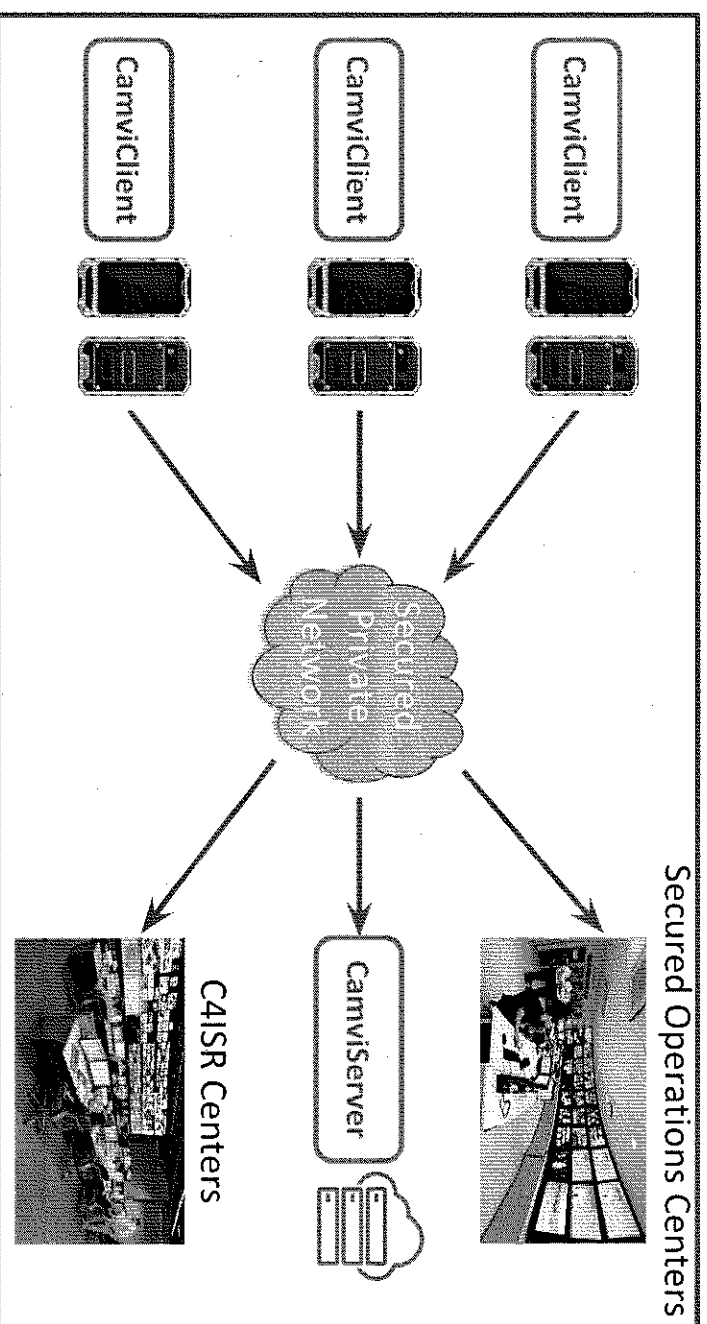
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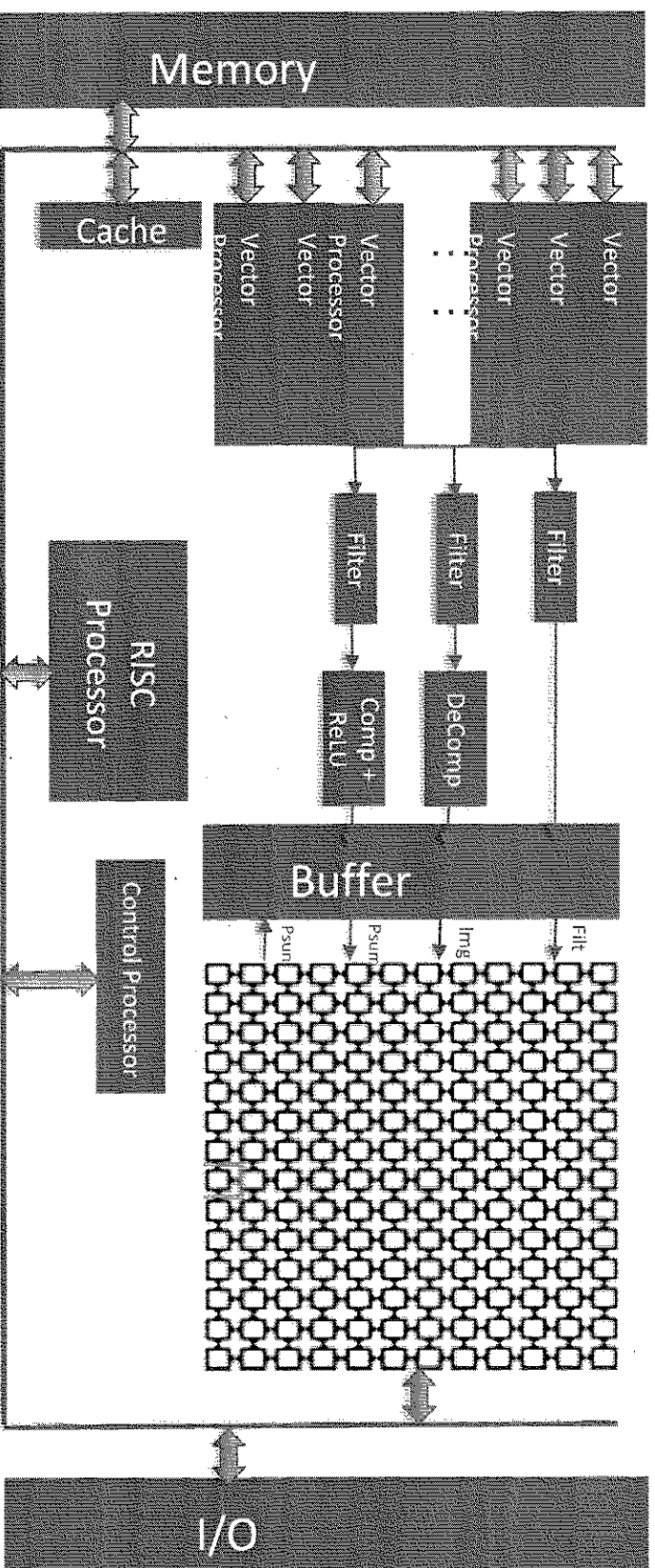
Application: Legacy CCTV Surveillance & Access Control

CamviEdge-VPU (2019)



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Technologies

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Application: Massive scale machine-based monitoring

CamviDTS: Data Training Service



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Technologies

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Applicable to all Camvi customers



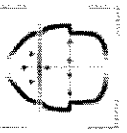
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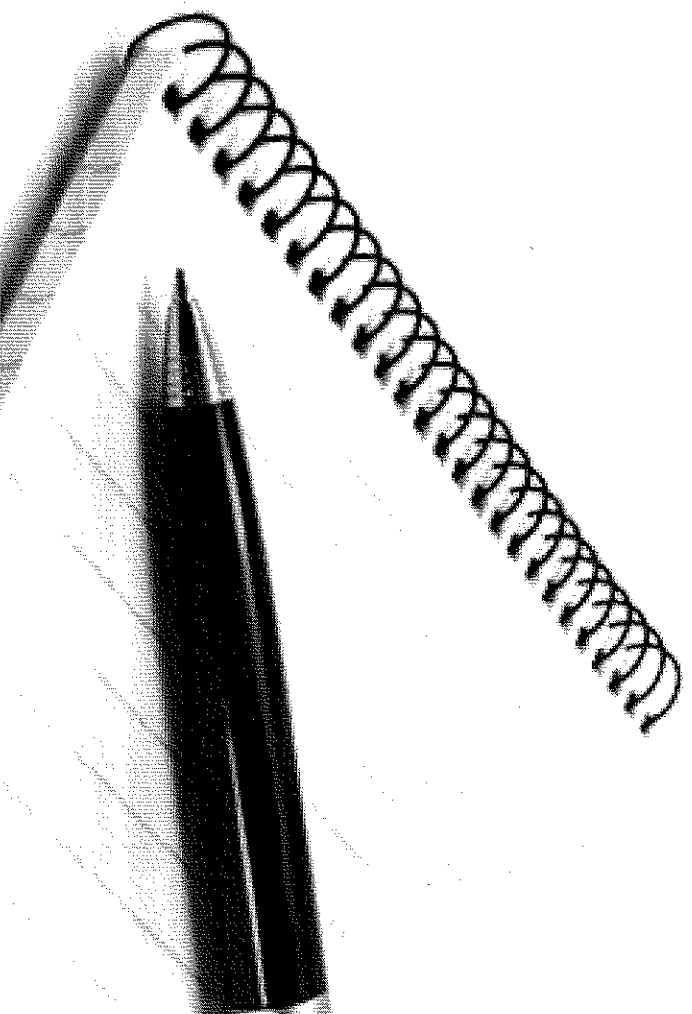
Applications: Border Control and Law Enforcement

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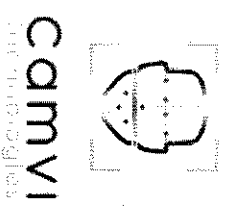


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technologies

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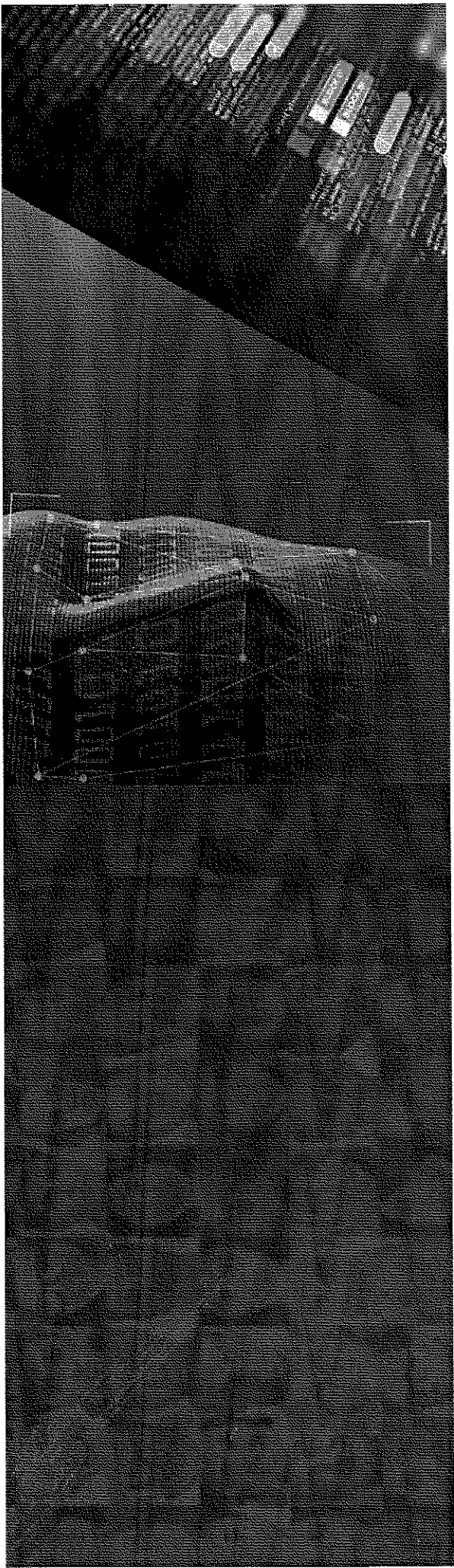
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Matt McCrann

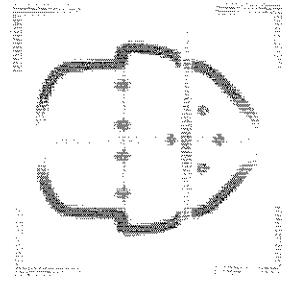
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Thank you!



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